

WHAT IS CLAIMED IS:

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1. A management mediating device:  
comprising:

management system communication means for  
making a connection to a management system outside a  
10 fire wall from inside the fire wall, and receiving a  
command from the management system;

processing means for performing a process in  
accordance with the received command;

management object system communication means  
15 for transferring the command to a management object  
system;

storing means for storing a connection  
schedule of the management system communication  
means; and

20 instructing means for, in accordance with  
the connection schedule, instructing the management  
system communication means to make a connection to  
the management system.

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2. The management mediating device  
according to claim 1, wherein in accordance with the  
5 connection schedule, the instructing means provides  
to the management system communication means at least  
one of:

- 1) an instruction of making a connection to  
the management system at a specified date and time;
- 10 2) an instruction of making a connection to  
the management system at a specified time every day;
- 3) an instruction of making a connection to  
the management system at a specified date and time  
every month;
- 15 4) an instruction of making a connection to  
the management system in a specified period at  
intervals of a specified value;
- 5) an instruction of making a connection to  
the management system in a specified period at  
20 intervals of a specified value every day; and
- 6) an instruction of making a connection to  
the management system from a specified date and time  
at intervals of a specified value for an indefinite  
period.

3. The management mediating device

5 according to claim 1, wherein the connection schedule includes a start date and time, an end date and time, and a value of an interval, and in accordance with the connection schedule, the instructing means provides to the management system at least one of:

10 1) when only the start date and time is specified, an instruction of making a connection to the management system at the specified start date and time;

2) when only a start time of the start date and time is specified, an instruction of making a connection to the management system at the start time every day;

3) when only the start date and time is specified, and a month of the start date and time is not specified, an instruction of making a connection to the management system at the start date and time every month;

4) when all of the start date and time, the end date and time, and the value of the interval, an instruction of making a connection to the management

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system from the start date and time to the end date and time at intervals of the value;

5        5) when all of the start date and time, the end date and time, and the value of the interval are specified, and only the start time and the end time of the start date and time and the end date and time are specified, an instruction of making a connection to the management system from the start time to the end time at intervals of the value every day; and

10        6) when the start date and time and the value of the interval are specified, and the end date and time is not specified, an instruction of making a connection to the management system from the start date and time for an indefinite period.

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4. The management mediating device  
20 according to claim 1, wherein the processing means has a schedule changing function of changing the connection schedule stored in the storing means in accordance with the command.

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5. The management mediating device  
according to claim 4, wherein when the command is a  
5 schedule adding command, the processing means adds an  
additional connection schedule to the connection  
schedule stored in the storing means, the additional  
connection schedule being attached to the schedule  
adding command.

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6. The management mediating device  
15 according to claim 4, wherein the connection schedule  
is constituted by a plurality of unit schedules, and  
an identifier is attached to each of the unit  
schedule,

when the command is a schedule deleting  
20 command, the processing means searches the storing  
means to find the unit schedule corresponding to the  
identifier attached to the schedule deleting command,  
and deletes the found unit schedule.

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7. The management mediating device  
according to claim 4, wherein the command is an all  
5 schedule changing command, the processing means  
extracts an Internet address attached to the all  
schedule changing command, causes the management  
system communication means to obtain a new connection  
schedule existing at the Internet address, and  
10 replaces the connection schedule stored in the  
storing means with the new connection schedule.

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8. The management mediating device  
according to claim 4, wherein when the command is a  
schedule requiring command, the processing means  
reads the connection schedule from the storing means,  
20 and causes the management system communication means  
to provide the connection schedule to the management  
system.

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9, The management mediating device  
according to claim 1, wherein the management system  
communication means has a SOAP processing function of  
5 making communication with the management system based  
on SOAP.

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10. A management mediating program that is  
used for a management mediating device, wherein the  
management mediating device includes first  
communication means, processing means, second  
15 communication means, storing means that stores a  
connection schedule, and instructing means,  
the management mediating program comprising:  
a first communication program code of  
causing the first communication means to make a  
20 connection to a management system via the Internet,  
and to receive a command from the management system,  
wherein the management mediating device is positioned  
at an inside of a fire wall, and the management  
system is positioned at an outside of the fire wall;  
25 a processing program code of causing the

processing means to perform a process in accordance with the command;

a second communication program code of causing the second communication means to transfer  
5 the command to a management object system; and

an instructing program code of, in accordance with the connection schedule, causing the instructing means to provide to the first communication an instruction of making a connection  
10 to the management system.

15 11. A computer readable storing medium that stores a management mediating program that is used for a management mediating device, wherein the management mediating device includes first communication means, processing means, second  
20 communication means, storing means that stores a connection schedule, and instructing means,  
the management mediating program comprising:  
a first communication program code of causing the first communication means to make a  
25 connection to a management system via the Internet,



and to receive a command from the management system,  
wherein the management mediating device is positioned  
at an inside of a fire wall, and the management  
system is positioned at an outside of the fire wall;

5           a processing program code of causing the  
processing means to perform a process in accordance  
with the command;

          a second communication program code of  
causing the second communication means to transfer  
10 the command to a management object system; and

          an instructing program code of, in  
accordance with the connection schedule, causing the  
instructing means to provide to the first  
communication an instruction of making a connection  
15 to the management system.

20           12. An image processing apparatus that  
comprises a hardware resource including at least one  
of a displaying unit, a printing unit, a scanner unit,  
a facsimile unit, a hard disk, an imaging unit and a  
network interface, and provides a service including  
25 at least one of a printing service, a copying service,

and a facsimile service,

the image processing apparatus further comprising:

at least one application that performs a particular process for the service;

management system communication means for making a connection to a management system from an inside of a fire wall, and receiving a command from the management system positioned at an outside of the fire wall;

processing means for performing a process in accordance with the command;

storing means for storing a connection schedule of the management system communication means; and

instructing means for, in accordance with the connection schedule, instructing the management system communication means to make a connection to the management system.

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13. The image processing apparatus according to claim 12, wherein in accordance with the

connection schedule, the instructing means provides to the management system communication means at least one of:

- 1) an instruction of making a connection to  
5 the management system at a specified date and time;
- 2) an instruction of making a connection to  
the management system at a specified time every day;
- 3) an instruction of making a connection to  
the management system at a specified date and time  
10 every month;
- 4) an instruction of making a connection to  
the management system in a specified period at  
intervals of a specified value;
- 5) an instruction of making a connection to  
15 the management system in a specified period at  
intervals of a specified value every day; and
- 6) an instruction of making a connection to  
the management system from a specified date and time  
at intervals of a specified value for an indefinite  
20 period.

25 14. The image processing apparatus

according to claim 12, wherein the connection  
schedule includes a start date and time, an end date  
and time, and a value of an interval, and in  
accordance with the connection schedule, the  
5 instructing means provides to the management system  
at least one of:

1) when only the start date and time is  
specified, an instruction of making a connection to  
the management system at the specified start date and  
10 time;

2) when only a start time of the start date  
and time is specified, an instruction of making a  
connection to the management system at the start time  
every day;

15 3) when only the start date and time is  
specified, and a month of the start date and time is  
not specified, an instruction of making a connection  
to the management system at the start date and time  
every month;

20 4) when all of the start date and time, the  
end date and time, and the value of the interval, an  
instruction of making a connection to the management  
system from the start date and time to the end date  
and time at intervals of the value;

25 5) when all of the start date and time, the

end date and time, and the value of the interval are specified, and only the start time and the end time of the start date and time and the end date and time are specified, an instruction of making a connection  
5 to the management system from the start time to the end time at intervals of the value every day; and

6) when the start date and time and the value of the interval are specified, and the end date and time is not specified, an instruction of making a  
10 connection to the management system from the start date and time for an indefinite period.

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15. The image processing apparatus according to claim 12, wherein the processing means has a schedule changing function of changing the connection schedule stored in the storing means in  
20 accordance with the command.

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16. The image processing apparatus

according to claim 15, wherein when the command is a  
schedule adding command, the processing means adds an  
additional connection schedule to the connection  
schedule stored in the storing means, the additional  
5 connection schedule being attached to the schedule  
adding command.

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17. The image processing apparatus  
according to claim 15, wherein the connection  
schedule is constituted by a plurality of unit  
schedules, and an identifier is attached to each of  
15 the unit schedule,

when the command is a schedule deleting  
command, the processing means searches the storing  
means to find the unit schedule corresponding to the  
identifier attached to the schedule deleting command,  
20 and deletes the found unit schedule.

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18. The image processing apparatus

according to claim 15, wherein the command is an all  
schedule changing command, the processing means  
extracts an Internet address attached to the all  
schedule changing command, causes the management  
5 system communication means to obtain a new connection  
schedule existing at the Internet address, and  
replaces the connection schedule stored in the  
storing means with the new connection schedule.

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19. The image processing apparatus  
according to claim 15, wherein when the command is a  
15 schedule requiring command, the processing means  
reads the connection schedule from the storing means,  
and causes the management system communication means  
to provide the connection schedule to the management  
system.

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20. The image processing apparatus  
25 according to claim 12, wherein the management system

communication means has a SOAP processing function of making communication with the management system based on SOAP.

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21. A management mediating program that is executed in an image processing apparatus in cooperation with at least one application that manages or controls a hardware resource,

wherein the hardware resource includes at least one of a displaying unit, a printing unit, a scanner unit, a facsimile unit, a hard disk, an imaging unit and a network interface, and the image processing apparatus provides a service including at least one of a printing service, a copying service, and a facsimile service,

the at least one application performs a particular process for the service,

the image processing apparatus comprises first communication means, processing means, storing means that stores a connection schedule, and instructing means,

and the management mediating program



comprises:

a first communication program code of causing the first communication means to make a connection to a management system via the Internet,  
5 and to receive a command from the management system, wherein the management mediating device is positioned at an inside of a fire wall, and the management system is positioned at an outside of the fire wall;

a processing program code of causing the  
10 processing means to perform a process in accordance with the command;

a second communication program code of causing the second communication means to transfer the command to a management object system; and

15 an instructing program code of, in accordance with the connection schedule, causing the instructing means to provide to the first communication an instruction of making a connection to the management system.

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22. A computer readable storing means that stores a management mediating program that is executed in an image processing apparatus in cooperation with at least one application that  
25 manages or controls a hardware resource,

wherein the hardware resource includes at least one of a displaying unit, a printing unit, a scanner unit, a facsimile unit, a hard disk, an imaging unit and a network interface, and the image  
5 processing apparatus provides a service including at least one of a printing service, a copying service, and a facsimile service,

the at least one application performs a particular process for the service,

10 the image processing apparatus comprises first communication means, processing means, storing means that stores a connection schedule, and instructing means,

and the management mediating program  
15 comprises:

a first communication program code of causing the first communication means to make a connection to a management system via the Internet, and to receive a command from the management system,  
20 wherein the management mediating device is positioned at an inside of a fire wall, and the management system is positioned at an outside of the fire wall;

a processing program code of causing the processing means to perform a process in accordance  
25 with the command;

a second communication program code of causing the second communication means to transfer the command to a management object system; and

an instructing program code of, in  
5 accordance with the connection schedule, causing the instructing means to provide to the first communication an instruction of making a connection to the management system.

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23. A remote management system in which a management object system is managed by communication  
15 between a management system and a management mediating device,

wherein the management mediating device comprises:

management system communication means for  
20 making a connection to the management system outside a fire wall from inside the fire wall, and receiving a command from the management system;

processing means for performing a process in accordance with the received command;

25 management object system communication means

for transferring the command to a management object system;

storing means for storing a connection schedule of the management system communication

5 means; and

instructing means for, in accordance with the connection schedule, instructing the management system communication means to make a connection to the management system,

10 and wherein the processing means changes the connection schedule stored in the storing means in accordance with a schedule changing command received from the management system.

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24. A remote management method of managing a management object system by communication between a management mediating device and a management system, 20 the method comprising the steps of:

a) making a connection, via the Internet, from inside a fire wall to the management system outside the fire wall;

25 b) receiving a command from the management

system by using the connection;

c) performing a process in accordance with the command;

d) transferring the command to a management  
5 object system;

e) storing a connection schedule;

f) providing an instruction so that at the step a), the connection is made in accordance with the connection schedule; and

10 g) when the command is a schedule changing command, changing the stored connection schedule in accordance with the schedule changing command.

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